Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1-3.   (Canceled)

4.   (Currently Amended) A personal identification method for identifying a user by projecting an objective beam and a reference beam subjected to spatial light modulation in accordance with information to be recorded onto a holographic recording portion of an optical information recording medium having the holographic recording portion to record the information by interference fringes, and projecting a reproduction reference beam onto the interference fringes to reproduce the object beam, the method comprising:

subjecting the reference beam to the spatial light modulation by record cryptographic identification information based on biometric information of the user when recording the information,

subjecting the reproduction reference beam to the spatial light modulation by validation cryptographic identification information based on biometric information directly obtained from the user when reproducing the information,

imaging the biometric information by a predetermined encoding scheme ~~forms,~~ forming the record cryptographic identification information and the validation cryptographic identification information, and this image is used as a modulation pattern of the reference beam and the reproduction reference beam, wherein

the encoding scheme comprises the steps of:

dividing an original image displaying the biometric information into a plurality of pixel blocks, said pixel blocks being composed of a plurality of and the same number of pixels, and detecting <u>and counting</u> the number of ON pixels or OFF pixels in each pixel block; and

converting the pixels of ~~every~~ each pixel block into <u>a corresponding one of a plurality of predetermined</u> conversion pixel ~~patterns predetermined~~ patterns <u>based</u> on the <u>counted</u> number of ON pixels or OFF pixels ~~in accordance with the detected number~~ in order to provide a bitmap image indicating the record cryptographic identification information and the validation cryptographic identification information; and

wherein the pixel block is composed of an even number equal to or more than six of pixels, and the conversion pixel pattern has the same number of ON pixels and OFF pixels.

5.   (Previously Presented) The personal identification method according to claim 4, wherein

the reference beam and the reproduction reference beam are subjected to phase spatial light modulation.

6.   (Canceled)

7.   (Previously Presented) The personal identification system according to claim 12,

further comprising:

a hardware for allowing or refusing the user in response to the allowing or refusing signal from the calculation device.

8.   (Previously Presented) The personal identification system according to claim 12, wherein:

a client server is provided with the biological information sensor, the information processing device, the reproduction optical system, and the spatial light modulator; a host server is provided with the calculation device; the client server and the host server are connected by a circuit; the client server outputs the reproduced personal identification information; and the host server outputs the allowing or refusing signal.

9.   (Original) The personal identification system according to claim 7, wherein:

a client server is provided with the biological information sensor, the information processing device, the reproduction optical system, and the spatial light modulator; a host server is provided with the calculation device; the client server and the host server are connected by a circuit; the client server outputs the reproduced personal identification information; and the host server outputs the allowing or refusing signal.

10-11. (Canceled)

12.   (Currently Amended) A personal identification system comprising:

an optical information recording medium having a holographic recording portion in which a hologram is formed, the hologram being formed by interference fringes when a reference beam subjected to spatial light modulation by record cryptographic identification information based on biometric information of a user and an object beam subjected to spatial light modulation in accordance with information to be recorded are projected;

a biological information sensor that can directly obtain the biometric information from the user;

an information processing device for using the biometric information obtained by the biological information sensor as validation cryptographic identification information;

a reproduction optical system for projecting a reproduction reference beam similar to the reference beam at the time of recording to the holographic recording portion in order to reproduce the recorded information by generated diffracted light;

a spatial light modulator for modulating the reproduction reference beam by the validation cryptographic identification information; and

a calculation device for verifying an identity of the user on the basis of the information reproduced by the reproduction optical system and outputting a signal allowing or refusing the user by a validation result, wherein

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the record cryptographic information and the validation cryptographic information are modulation patterns of the biometric information by imaging the biometric information by a predetermined encoding scheme,

the record cryptographic information and the validation cryptographic information are bitmap images formed by dividing original images displaying the biometric information into a plurality of pixel blocks composed of a plurality of and the same number of pixels, detecting and counting the number of ON pixels or OFF pixels in each pixel block, and converting the pixels of every each pixel block into a corresponding one of a plurality of predetermined conversion pixel patterns predetermined based on the counted number of ON pixels or OFF pixels in accordance with the detected number, and

the pixel block is composed of an even number equal to or more than six of pixels, and the conversion pixel pattern has the same number of ON pixels and OFF pixels.

13.   (Previously Presented) The personal identification system according to claim 12, wherein

the hologram is interference fringes between the object beam and the reference beam subjected to the phase spatial light modulation.

14.   (Previously Presented) The personal identification system according to claim 12, wherein

the hologram is interference fringes between the object beam and the reference beam subjected to the phase spatial light modulation.

15-20. (Canceled)

16.   (New) The personal identification method according to claim 4, wherein the number of predetermined conversion pixel patterns is equal to one more than the number of pixels contained in each pixel block, each of the conversion pixel patterns being different from the other conversion pixel patterns.

17.   (New) The personal identification method according to claim 16, wherein the bitmap image is created by counting the number of ON pixels in each pixel block, determining which one of the conversion pixel patterns corresponds to the counted number of ON pixels, and substituting the pixel block of the original image with the determined conversion pixel pattern.

18.   (New) The personal identification method according to claim 12, wherein the number of predetermined conversion pixel patterns is equal to one more than the number of pixels contained in each pixel block, each of the conversion pixel patterns being different from the other conversion pixel patterns.

19.   (New) The personal identification method according to claim 18, wherein the bitmap image is created by counting the number of ON pixels in each pixel block, determining which one of the conversion pixel patterns corresponds to the counted number of ON pixels, and substituting the pixel block of the original image with the determined conversion pixel pattern.